

IN THE CLAIMS:

Please cancel claims 185-188 without prejudice or disclaimer and add new claims 433-461 as shown below.

1-184. (Previously cancelled)

185-188. (Currently cancelled)

189-432. (Previously cancelled)

433. (New) A nanoparticle having oligonucleotides are attached thereto, the oligonucleotides are attached to the nanoparticles in a aging process comprising (i) contacting the oligonucleotides with the nanoparticles in a first aqueous solution for a period of time sufficient to allow some of the oligonucleotides to bind to the nanoparticles; (ii) adding at least one salt to the first aqueous solution to create a second aqueous solution; and (iii) contacting the oligonucleotides and nanoparticles in the second aqueous solution for an additional period of time to enable additional oligonucleotides to bind to the nanoparticles.

434. (New) The nanoparticle of Claim 433 wherein the second aqueous solution has an ionic strength sufficient to overcome at least partially the electrostatic attraction or repulsion of the oligonucleotides for the nanoparticles and the electrostatic repulsion of the oligonucleotides to each other.

435. (New) The nanoparticle of Claim 433 wherein the oligonucleotides and nanoparticles are contacted in aqueous solution for about 12 to about 24 hours.

436. (New) The nanoparticle of Claim 433 wherein salt is added to the aqueous solution to form the aqueous salt solution which is buffered at pH 7.0 and which contains about 0.1 M NaCl.

437. (New) The nanoparticle of Claim 433 wherein the oligonucleotides and nanoparticles are contacted in the second aqueous solution for an additional 40 hours to increase the density of oligonucleotides bound to the nanoparticles.

438. (New) The nanoparticle of Claim 433 wherein the salt is added to the first aqueous solution in a single addition.

439. (New) The nanoparticle of Claim 433 wherein the salt is added gradually to the first aqueous solution over time.

440. (New) The nanoparticle of Claim 433 wherein the salt is selected from the group consisting of sodium chloride, magnesium chloride, potassium chloride, ammonium chloride, sodium acetate, ammonium acetate, a combination of two or more of these salts, one of these salts in a phosphate buffer, and a combination of two or more these salts in a phosphate buffer.

441. (New) The nanoparticle of Claim 440 wherein the salt is sodium chloride in a phosphate buffer.

442. (New) The nanoparticle of Claim 433 wherein the oligonucleotides are bound to the nanoparticles through sulfur linkages.

443. (New) The nanoparticle of Claim 433 wherein the oligonucleotides are present on a surface of the nanoparticles at a surface density of at least 10 picomoles/cm².

444. (New) The nanoparticle of Claim 443 wherein the oligonucleotides are present on the surface of the nanoparticles at a surface density of at least 15 picomoles/cm².

445. (New) The nanoparticle of Claim 444 wherein the oligonucleotides are present on the surface of the nanoparticles at a surface density from about 15 picomoles/cm² to about 40 picomoles/cm².

446. (New) The nanoparticle of Claim 433 wherein the nanoparticles are metallic nanoparticles, semiconductor nanoparticles, or a combination thereof.

447. (New) The nanoparticle of claim 446 wherein the metallic nanoparticles are made of gold, and the semiconductor nanoparticles are made of CdSe/ZnS (core/shell).

448. (New) The nanoparticle of Claim 433 wherein at least some of the oligonucleotides on the nanoparticles comprise at least one type of recognition oligonucleotides, each type of recognition oligonucleotides comprising a spacer portion and a recognition portion, the spacer portion being designed so that it is bound to the nanoparticles, the recognition portion having a sequence complementary to at least a portion of a sequence of a selected type of binding oligonucleotides.

449. (New) The nanoparticle of Claim 448 wherein the spacer portion has a moiety covalently bound to it, the moiety comprising a functional group through which the spacer portion is bound to the nanoparticles.

450. (New) The nanoparticle of Claim 448 wherein the spacer portion comprises at least about 10 nucleotides.

451. (New) The nanoparticle of Claim 450 wherein the spacer portion comprises from about 10 to about 30 nucleotides.

452. (New) The nanoparticle of Claim 448 wherein the bases of the nucleotides of the spacer portion are all adenines, all thymines, all cytosines, all uracils or all guanines.

453. (New) The nanoparticle of Claim 433 wherein at least some the oligonucleotides bound to the nanoparticles comprise at least one type of recognition oligonucleotides, each type of recognition oligonucleotides comprising a sequence complementary to at least one portion of a sequence of a selected type of binding oligonucleotides; and a type of diluent oligonucleotides.

454. (New) The nanoparticle of Claim 453 wherein, each type of recognition oligonucleotides comprises a spacer portion and a recognition portion, the spacer portion being

designed so that it is bound to the nanoparticles, the recognition portion having a sequence complementary to at least one portion of a sequence of a selected type of binding oligonucleotides.

455. (New) The nanoparticle of Claim 454 wherein the spacer portion has a moiety covalently bound to it, the moiety comprising a functional group through which the spacer portion is bound to the nanoparticles.

456. (New) The nanoparticle of Claim 454 wherein the spacer portion comprises at least about 10 nucleotides.

457. (New) The nanoparticle of Claim 456 wherein the spacer portion comprises from about 10 to about 30 nucleotides.

458. (New) The nanoparticle of Claim 454 wherein the bases of the nucleotides of the spacer portion are all adenines, all thymines, all cytosines, all uracils or all guanines.

459. (New) The nanoparticle of Claim 454 wherein the diluent oligonucleotides contain about the same number of nucleotides as are contained in the spacer portions of the recognition oligonucleotides.

460. (New) The nanoparticle of Claim 459 wherein the sequence of the diluent oligonucleotides is the same as that of the spacer portions of the recognition oligonucleotides.

461. (New) A kit comprising the nanoparticle of any one of Claims 433, 448, or 453.